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No. 2.—Some Recent Advances in Veterinary Medicine and Surgery in Large Animals*

by

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REDDITCH, WORCS.

Sulphonamides

In 1908 sulphanilamide was first prepared, in 1909 the sulphonamide dyes were introduced, but it was not until 1935 that this group of powerful chemotherapeutic substances was first used in the treatment of disease in the form of Prontosil. It was subsequently believed that the action of Prontosil was due to *para*-aminobenzene sulphonamide (sulphanilamide). The use of sulphanilamide was very quickly taken up by the veterinary profession, and it is no exaggeration to say that since its introduction many tons of this substance have been used by its members.

SULPHANILAMIDE

Sulphanilamide, like all other members of the group of sulphonamides, exerts its action by being bacteriostatic rather than bactericidal, and it is particularly active against haemolytic streptococci. Its action is believed to be due to the fact that *p*-aminobenzene sulphonamide is very similar to *p*-aminobenzoic acid, a substance required by certain bacteria in order that they may grow and multiply, and that the organisms take up the *p*-aminobenzene sulphonamide in mistake for *p*-aminobenzoic acid, hence the bacteriostatic action. In veterinary practice probably its main use has been in the treatment of streptococcal mastitis in the control of which it proved very effective. It must be remembered that in order for the sulphanilamide to exert its action upon bacteria one should endeavour to obtain a concentration in the blood stream of 10 mgm. per cent. In practice this is usually effective by giving an initial dose of 4 oz. to large cows such as Friesians, followed by three successive 2 oz. doses at intervals of eight hours, or, in the case of a Jersey, or other small breeds, an initial dose of 3 oz. followed by 1½ oz. doses. It must be remembered that if sulphanilamide therapy is to be effective, it will be so in 24 to 48 hours. Protracted dosing has many disadvantages, the first of which is that, in some cases, it produces anaemia and damage to the red bone marrow; secondly, it is very depressing in its action, and prolonged dosage is not only useless but costly. Furthermore, organisms may become sulphanilamide resistant, and this resistance is generally produced by giving the drug in too small a concentration, and over a protracted period.

Clinical Summary.—Sulphanilamide is most effective in the control of streptococcal mastitis (one of the forms of mastitis occurring in lactating cows) provided it is given in adequate doses in the early stages, and provided always the clinical picture and treatment is supported by bacteriological findings. Unfortunately, in practice, many of these cases of streptococcal mastitis after apparent recovery following sulphanilamide treatment, recur at intervals of two, four or six weeks, to be again subdued by sulphanilamide therapy, each subsequent attack—again unfortunately—leaving more induration of the quarter, or quarters affected. In such cases the infusion of the affected quarter at a later stage of lactation with acriflavine 1:10,000, or euflavine has been tried, but it would appear that better results are attained by infusing "Sulphanilamide L.S.F." (Burroughs Wellcome & Co.) in 10 per cent. to 20 per cent. solution. Another method employed in an endeavour to persuade the quarter to return to normal is to suckle calves on the affected cow, and to give the cow as long a rest as possible before the commencement of the next lactation. It would appear that the prevention of streptococcal mastitis depends entirely upon technique and method of milking. Once the disease has occurred, sulphanilamide is useful in an endeavour to control it.

To-day, it appears to be the common practice to apply sulphanilamide to all wounds on bovines, be they accidental or surgical—in the author's opinion with useless results in the majority of cases. It must be remembered that the common wound contaminant in the bovine species is *C. pyogenes*, which organism is not affected by sulphanilamide, and from experience I am convinced that many wounds in bovines heal more satisfactorily without the application of sulphanilamide. This does not apply to the equine species in which the common wound contaminant is the streptococcus, and in which the use of sulphanilamide, as an accidental or surgical wound dressing, is excellent. Finally, it must be said that as yet we do not know what damage, if any, this drug produces upon the kidney or liver parenchyma, or upon heart muscle or other organs.

SULPHAPYRIDINE

The next substance belonging to the sulphonamide group which was introduced into veterinary practice was sulphapyridine (M. & B. 693). In human practice this substance proved of great value in the treatment of pneumonia, meningitis and gonorrhoea. Unfortunately, in the treatment of pneumonia in large animals it has not been so successful as in man, no doubt because the organisms affecting these are not susceptible to its action.

SULPHATHIAZOLE

Another member of the group, and which appears to exert its action against some forms of staphylococci, was tried just before the 1939 war in the treatment of acute and subacute staphylococcal mastitis. Unfortunately, the outbreak of hostilities, and the disappearance from the market of this substance, brought an end to this experiment. No doubt the drug will soon become available in large quantities, and perhaps will prove its worth. From the meagre amount of evidence obtained prior to 1939, it is probable that sulphathiazole will not prove as effective in the control of staphylococcal infections as sulphanilamide has done in the control of streptococcal infections.

SULPHAGUANIDINE

This member of the group is as yet only available in small quantities and at a very high cost. The author's experience of its use in large animals extends only to that of the treatment of contagious white scour in calves, in which cases, given in doses of 4 to 5 grammes at intervals of four hours, it has proved very satisfactory. The members of the sulphonamide group of drugs are rapidly becoming legion; the above are the small number of which it has been the lot of the author to have clinical experience in the treatment of large animals.

Penicillin

This is described in the British Pharmacopoeia as the antiinfective acid produced when *Penicillium notatum* or related organisms are grown under appropriate conditions or in a suitable culture medium, converted into the sodium or calcium salt. It was first introduced by Fleming and his co-workers, and only recently has been employed in veterinary practice.

Briefly, it may be described as an organic acid which is neither protein nor carbohydrate in nature. Two forms are employed, both of which are yellowish powders; the sodium salt is more commonly used in veterinary practice; the calcium salt is less soluble, and is used generally in the form of tablets or powder because it is free from the hygroscopic properties of the sodium salt. The great advantage of penicillin is that it appears to be almost non-toxic; this must be remembered in its use because it is possible to produce penicillin-resistant strains in the same way as one may produce sulphonamide-resistant strains, so that, whenever possible, big doses of penicillin are desirable. It has other advantages, too, in that it is equally efficacious in the presence of pus, while it is bactericidal as well as being bacteriostatic. Of course, it is not effective against all organisms; briefly, it may be stated to be effective against Gram-positive organisms.

The organisms commonly encountered in veterinary practice which are sensitive to the action of penicillin are as follows:—

Staphylococcus;
Streptococcus;
Actinomyces;
B. anthracis;

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Clostridia: *tetani welchii—septique*;
Erysopelothrix R., and
Spirochaetes.

Organisms commonly encountered in veterinary practice which are *not* sensitive to the action of penicillin are:—

Gram-negative organisms;
Coli Group;
Brucella;
Pasteurella, and most viruses, yeast and moulds.

As already stated, penicillin is prepared and packed in the form of a dry powder in rubber-capped bottles, each bottle containing 100,000 units of penicillin. The unit of penicillin is that amount of penicillin which will inhibit the growth of a test staphylococcus in 50 millilitres of broth.

Immediately before use 10 to 20 c.c. of sterile distilled water are injected through the rubber cap of the bottle, and the solution is now ready for use.

The "sterile distilled water" should be re-sterilized daily, otherwise invading organisms will produce penicillinase which destroys penicillin.

Penicillin in the Treatment of *C. pyogenes* Mastitis. (This is a form of mastitis affecting dry cows or heifers with a marked seasonal incidence, hence the term "Summer Mastitis"; it may occur in any female bovine, from a few months old onwards, irrespective of whether they are pregnant or not.)

During the summer of 1946 a very large number of cases of *C. pyogenes* mastitis have been encountered and treated by means of penicillin introduced into the affected quarter or quarters or by intramuscular injections at intervals of three hours for periods of 24, 48, 72, and in one case 96 hours.

It was decided that where the systemic disturbance was very slight or sub-clinical such cases should be treated by intramammary injections of 100,000 units into the affected quarter, and repeated after 24 hours; this line of treatment in the case of maiden heifers generally resulted in the return to normal of the affected quarter after five or six daily injections, this, provided always, the case was dealt with at the onset and not after it had been in existence for some days. The generally recommended dosage of 10,000 units by intramammary injection was found to be quite inadequate, and after some unsatisfactory results with this dosage, 100,000 units were used as routine injections with far better results. Further cases were tried with a lower daily dosage than 100,000—50 or 30 thousand—but results were not satisfactory, and it would appear that 100,000 units is the necessary minimal dose. In the case of pregnant heifers, the results were not as good as in the maiden heifers, and in cows which had bred several calves, the results again were not as good as in the pregnant heifers.

In cases where there was marked systemic disturbance with swelling of the hocks and fetlock joints, the intramuscular injection of 100,000 units every three hours was used until the systemic disturbance had subsided; this resulted in the death-rate in such cases being 2 per cent.

Clinical Summary.—It would appear that penicillin is the only substance as yet discovered which is in any way effective against *C. pyogenes* mastitis. Before its introduction it may be said that a quarter (or quarters) affected with this form of mastitis was invariably rendered functionless and a high percentage of animals so attacked died. In the case of maiden heifers results were highly satisfactory; in the pregnant heifers the results with regard to the return of the affected quarter or quarters to normality was not so good, but the systemic disturbance in such cases was markedly reduced by the penicillin treatment; in the case of cows the results with regard to the quarters were again less satisfactory than in the pregnant heifers, but the mortality was greatly reduced.

Strain 19 Brucella abortus Culture

In 1942 the introduction by the Ministry of Agriculture of this form of vaccination against contagious abortion marked a great advance in the control of this disease. The advantage claimed for this strain of *Brucella abortus* culture is that vaccinated animals cannot spread the disease—this is very different from the live cultures employed prior to this date; again, there is no risk of the vaccinated animals excreting virulent organisms in their milk, and thereby endangering human life.

The routine use of this form of vaccination is common knowledge to all veterinary surgeons. It is recommended that heifers from six months onwards are vaccinated, and until the beginning of this year it was advised to leave animals for a period of six weeks after vaccination before mating; more recently it has been decided that they may be mated the day after vaccination. The scientific explanation of this change the author has not been able to obtain, but no doubt when a few thousand animals have been treated on these lines we shall be able to say whether it is as good as or better than allowing an interval of six weeks between vaccination and mating.

Such vaccinated heifers after they have had their calf should be vaccinated again, and this second vaccination is usually adequate for the rest of their lives. If they are not vaccinated after their first calf quite a high percentage will abort their second calf. Care must be exercised when carrying out vaccination, since there have been recorded cases of deaths following vaccination, which may or may not have been caused by the vaccine. Many animals, particularly calves, run a high temperature following vaccination, and if exposed at this time to inclement conditions, they may be rendered seriously ill; provided reasonable precautions are taken, however, the chances of any unfortunate sequelae are remote. Unfortunately a more serious condition encountered in vaccinated heifers is the difficulty of obtaining conception following vaccination in some cases. The Ministry of Agriculture will undoubtedly deny this, and Mr. J. R. Lawson has done his best (and nearly succeeded) on many occasions to persuade the author that these breeding difficulties are not vaccinial in origin; this in the author's opinion is the only disadvantage in the use of strain 19.

When it is balanced against the undoubted advantages accruing from this form of vaccination in controlling the ravages of contagious abortion, it must be admitted to be of little significance.

Clinical Summary.—The employment of strain 19 in the control of contagious abortion is the most effective method to date of combating this disease, provided due care is taken in carrying out the vaccination, and the vaccination is repeated a second time. If it was possible to control the infertility which, in the author's opinion sometimes follows vaccination, then the method would be nearly perfect.

The question arises as to whether herds which are apparently free from contagious abortion, should be vaccinated or not: to quote Mr. J. R. Lawson, there are only three types of herds, those which have had contagious abortion, those which have got contagious abortion, and those which are going to have it. There would appear to be great wisdom in these words, and the author's opinion is that, in such cases, vaccination should be carried out.

Anaesthesia

(1) Local Anaesthesia

Probably the greatest recent advance in local anaesthesia is paravertebral nerve block, introduced into veterinary science by Farquharson of America. This form of nerve block consists in anaesthetizing the dorsal nerves as they leave the intervertebral foramina. In veterinary surgery the nerves concerned are the 13th thoracic and the 1st, 2nd and 3rd lumbar. These nerves as they emerge from the foramina divide into dorsal and ventral branches; the dorsal nerve supplies the region of the loins, and the ventral branch innervates the flank region, *i.e.*, the area bounded anteriorly by the last rib, superiorly by the lumbar transverse processes, and posteriorly by the external angle of the ilium. Nerve block of the ventral branches results in the desensitization of the region of the flank including skin, muscles and peritoneum, thereby enabling the operations of laparotomy, rumenotomy and caesarean section to be carried out painlessly.

The technique of obtaining this form of nerve block is not simple; it is as follows:—

An imaginary line two inches (5 cm.) from and parallel to the spinous processes of the dorsal vertebrae is taken on the side to be anaesthetized. The last rib (13th) is traced upwards to its head, and a site two inches from the mid-line is clipped and prepared ready for injection; similar sites are prepared at the posterior border of the 1st, 2nd and 3rd lumbar transverse processes, all two inches from the mid-line.

At this stage the author prefers to administer to the animal 1 oz. of chloral hydrate in 8 per cent. solution intravenously. This has the advantage of rendering the animal quiet; it may become recumbent if the chloral is given too quickly, but will generally rise again in eight to ten minutes. Immediately after the administration of the chloral, the sites delineated are again cleansed, and a four-inch needle of 16 B.W.G. is inserted through the skin in a vertical direction until the point is felt to encounter the head of the 13th rib; it is then withdrawn slightly, and directed backwards until the point is felt to be behind the rib. Twenty cubic centimetres of local anaesthetic (Parsetic—Parke Davis & Co.) is injected, not all in one position, but by varying the position of the point of the needle, a fairly large area is infiltrated. The procedure is repeated in the case of the 1st, 2nd and 3rd lumbar nerves, except that in these cases the lumbar transverse processes are encountered by the point of the needle, withdrawn slightly, and redirected until the point is at the posterior border of the processes. In the case of the 3rd lumbar nerve 5 to 10 c.c. of local anaesthetic are adequate, since the nerve only supplies a cutaneous branch to the posterior part of the area. Some ten to twelve minutes are allowed to elapse, when, if the injection has

been made correctly, the whole area of the flank will be desensitized. The advantages of this form of nerve block over local field infiltration are:—

(1) The area throughout its depth, skin, muscles and peritoneum is anaesthetized.

(2) This method is devoid of the disadvantages attending the infiltration of local anaesthetic at the site of the operation, whereby the healing processes are retarded.

There is no doubt this form of nerve block has greatly facilitated bovine abdominal surgery.

(2) General Anaesthesia

Narcosis and anaesthesia by the intravenous injection of chloral hydrate solution has been employed in veterinary science during and since the 1914-18 war but has not been employed on a large scale in equine and bovine surgery until recently. General anaesthesia by the inhalation of the common volatile anaesthetics is most unsatisfactory in large animals, except as a means of deepening narcosis or light anaesthesia induced by the administration of chloral. In the author's opinion the ideal form of anaesthesia in these animals consists of intravenous chloral to the stage of deep narcosis, or light anaesthesia supplemented by nerve block anaesthesia where possible; where this is not possible deep anaesthesia by intravenous chloral. Provided reasonable care is exercised in the induction of general anaesthesia by chloral hydrate solution given intravenously, the risk in healthy animals is practically nil. Over a period of ten years and comprising some hundreds of cases of the use of intravenous chloral, only one instance of death from this form of anaesthesia has been encountered, and this in an animal which had been suffering from a chronic suppurative condition for some months. The only disadvantages are:—

(1) In the event of careless administration some of the chloral hydrate solution may escape into the perivascular tissues, causing necrosis.

(2) If the animal is at the stage of deep anaesthesia induced by chloral hydrate solution, it may remain recumbent for one to two hours. This disadvantage may be easily overcome by the intravenous injection of 5 to 6 c.c. of posterior pituitary extract.

The technique of administration is as follows:—

An area over the jugular vein is cleansed with spirit and 1 to 2 c.c. of local anaesthetic injected subcutaneously immediately above the vein at the site chosen to carry out the intravenous injection. This site is generally in the lower part of the upper third of the jugular furrow, and the position of the vein may be determined accurately in most cases by applying pressure with the thumb of the left hand in the lower third of the furrow, thereby distending the vein above this point. A 1 c.c. intradermal syringe is particularly useful in applying the local anaesthetic in nervous animals. A few minutes are allowed to elapse, the jugular vein is raised, and a three-inch needle, 16 bore, is thrust through the skin and into the vein when the blood will escape; the needle is now directed upwards in the lumen of the vein until some three-quarters of its length is inserted. During the above procedure the animal is restrained by means of a bridle or halter only. The chloral hydrate solution, 8 to 10 per cent. with 1 per cent. sodium citrate added, is now injected, a rough estimation of the dosage required having been computed at the rate of 5·5 grammes per 50 kg. or 80 grains per 100 lb. body weight. This is an arbitrary estimate since there is a marked individual variation in the dosage required to induce narcosis or anaesthesia, and the operator must be guided by the state of the animal's reflexes. One of the great advantages of intravenous anaesthesia is that the stages may be carefully assessed during the introduction of the drug. One common method of introducing chloral hydrate solution is by means of the flutter valve apparatus. The author does not favour this method, particularly for young horses or thoroughbreds, because such animals dislike anything held in the position in which the flutter valve apparatus must be maintained for this form of administration. A safer method of introducing the chloral hydrate solution is to use a sterile Higginson's syringe, with a glass window between the syringe and the adaptor. In the case of nervous animals which have to be taken into a field, or on to an operating bed, ¾ to 1 oz. of chloral hydrate solution is given intravenously in the box. The apparatus is detached but the needle left *in situ*. The animal is led out into the field where further administration of chloral is continued; the rope or hobbles, whichever is being employed, are applied and more chloral hydrate is given to the required depth of narcosis or anaesthesia. The apparatus is again detached, still leaving the needle *in situ*, the animal secured and anaesthesia continued to the required depth. The author sees no reason for casting and securing the animal before the injection as suggested by some authors, since many of the great advantages of intravenous chloral are wasted by this method with added risk to the animal and operator.

The technique of intravenous anaesthesia by chloral hydrate solution in bovines is similar to that described in equines, except that in this species a cord must be placed round the base of the neck to raise the jugular vein owing to its being double on each side.

Bovine Operations

(1) Traumatic Reticulitis

The operation for the relief of this condition is nowadays performed by a large number of veterinary surgeons throughout the country. The method which the author prefers is as follows:—

Paravertebral anaesthesia is induced as described above. The area of the left flank is washed, shaved, and spirited, and a vertical incision about eight inches in length is made through the skin, external oblique, internal oblique, transversalis muscles and peritoneum, opening the abdominal cavity and exposing the rumen. A portion of the rumen is now pulled through the incision and maintained in this position by means of forceps, or if these are not available by four loops of tape through the peritoneum, and muscular wall of the rumen, two superiorly (anterior and posterior), and two inferiorly (anterior and posterior), and held by two assistants. Before incising the rumen, a sterile cloth is placed in and clipped in position in the lower commissure of the abdominal incision, so that when the incision is made in the rumenal wall if any ingesta escapes it will not contaminate the peritoneum or muscular layers. The operator's arm, clothed in a rubber sleeve, is now inserted into the rumen, passed downwards and forwards until the reticulum is reached. Here a careful search is made for a foreign body. At this stage care should be taken not to disturb the wall of the reticulum by searching for adhesions between the peritoneal surface of that organ and its adjacent structures, as if only a small portion of the offending foreign body is still obtainable movement of the reticular wall may make it impossible to pick it up. If the foreign body is not encountered in the first superficial palpation, each cell should be gone through methodically, removing the sand which may be obscuring one end of the foreign body. This precaution is mentioned because in the past it has been the author's unfortunate experience to carry out the operation without being able to detect a foreign body, and subsequently, upon *post-mortem* examination, to find that a foreign body was present, the available portion of which was obscured by sand in one of the cells of the reticulum. Having obtained a foreign body, search should be made for others before withdrawing the arm. Having inserted the arm into the rumen, it should not be withdrawn until the operator, as far as possible, is convinced there is no detectable foreign body or that he has removed all of them. This precaution diminishes the risk of infecting the peritoneum, thereby giving ultimately better results. The operator now scrubs up again. The peritoneal covering of the rumen is cleansed with sterile swabs and the rumenal wound sutured with a continuous catgut Lembert suture, commencing at the inferior commissure since this minimizes the risk of the escape of rumenal contents. Having closed the rumenal wall the parietal peritoneum is now sutured with a continuous suture of catgut commencing at the lower commissure; this being completed the skin and muscles are closed with interrupted tape sutures passing through skin, muscles, muscles, skin, and back through the edges of the skin close to the line of incision, so that when the suture is tied (which it should not be until all of them have been inserted) the edges of the skin incision will be everted, thereby bringing the subcutaneous portions into apposition and eliminating dead space. As previously stated, the author does not subscribe to the view that the rumen, muscles and cutaneous incision should be dusted with sulphanilamide.

(2) Amputation of the Bovine Digit

This is an operation which is fairly frequently necessitated in veterinary practice. Anatomically the coronopedal articulation in the bovine digit is easily vulnerable because it is only separated from the outside by the thin horn of the bulb of the heel on its inner aspect. The distance from this horny covering to the joint capsule itself is only slightly more than one-eighth of an inch so that it may be easily penetrated by thorns or nails, thus setting up a septic arthritis in the joint. Another common method of infection of the joint structure is by extension of the necrotic areas in so-called foul of the foot. Since the common infective agent in bovines is usually the *C. pyogenes* organism it is possible that injections of penicillin directly into the joint may prove beneficial and thus obviate the necessity of carrying out amputation of the digit.

Having decided to carry out the operation, the animal is anaesthetized with intravenous chloral supplemented with nerve block anaesthesia. The digit is thoroughly cleansed and spirited, and a tourniquet applied above the fetlock joint. An incision is now made extending from a little below and in front of the fetlock

joint downwards between the two digits and backwards on the posterior surface, keeping as close as possible to the digit to be amputated; a circular incision is now made over the middle of the os suffraginis, connecting the anterior and posterior parts of the previous incision. All the soft structures are incised down to the os suffraginis which is now sawn through and the damaged digit removed. The tourniquet is released, arterial haemorrhage arrested by catgut ligature and the tourniquet re-applied. No attempt is made to save any skin below the site of amputation since, if the condition has been in existence any length of time, this skin will have been severely damaged. The wound is packed with sterile swabs soaked in 1:1,000 acriflavine and securely bandaged; the tourniquet is then removed. The wound is dressed at weekly intervals. Far better results appear to be obtained by this method than in the one in which the skin is saved and sutured to form a sleeve into which the sterile packing is placed.

Equine Operations

The operation for relief of scrotal hernia in the horse has been carried out for many years under the name "Covered Operation." In this the parietal layer of the tunica vaginalis is exposed down to the external inguinal ring, and a wooden clam applied across the tunica vaginalis and its contained structures, minus the intestines. This may be a short wooden clam—in which case it goes inside the scrotal incision and is very difficult to remove some ten to twelve days later—or a long clam, which remains outside the scrotal incision and is similarly removed ten to twelve days later. The author has now performed 54 operations for the relief of this condition, using catgut for ligating the sac of the tunica vaginalis, with successful results in each case. The procedure is as follows:—

The animal is narcotized by means of intravenous chloral hydrate, cast, secured, and the anaesthesia deepened to the required degree by further injection of chloral hydrate solution. It is now rolled on to its back and fixed in position by bales of straw on each side. The scrotal region is thoroughly washed, cleansed and spirited; a large window cloth is applied and secured by towel clips. The testicle is grasped between the finger and thumb of the left hand and tensed against the scrotal integument, and incision is now made through the skin, dartos muscle and scrotal fascia, exposing the parietal layer of the tunica vaginalis. This is separated from its overlying structures by blunt dissection down to the external inguinal ring. The tunica vaginalis is now incised but retained by means of forceps, the testicle exposed and severed as far up the spermatic cord as possible by means of a sterile emasculator. The sac of the tunica vaginalis is now rotated, and a transfixing ligature of number 3 catgut applied as high up as possible. The sac of the tunica vaginalis one inch beneath this ligature is removed by scissors, and the cavity is now packed with 2 oz. of sulphanilamide powder. The scrotal wound may or may not be sutured. The advantages of this method over the old method of the clam is that there is little or no swelling at the site of operation and the area heals practically by first intention.

Short Wave Wireless

I will now deal with the employment of Short Wave Wireless in the treatment of sprains of the flexor tendons, check ligament and suspensory ligament. Almost from time immemorial it has been customary to treat sprains of the above-mentioned structures by blistering, or firing and blistering. The form of firing employed for such conditions is generally line firing. It is claimed that this form of counter irritation increases vascularity of the parts, thereby hastening resolution, and by some that the actual scar tissue left acts as a bandage, thereby supporting the structures immediately beneath. One cannot deny that counter irritation increases the vascularity of the part and therefore should hasten resolution, but the author has yet to be convinced that some twelve to 16 lines of scar tissue on the posterior aspect of the metacarpus gives any support to the structures beneath. To imagine for a moment that such scar tissues can support the tendons, check ligament and suspensory ligament of an animal and its jockey, weighing a 1,000 lb. or more, landing over a fence does not appear to be logical. In support of this view it was thought that a better way of inducing increased vascularity and thereby resolution of such structures, could be carried out by means of Short Wave Wireless. This short wave therapy is applied by means of an Inductotherm with a short wave therapy circuit, by means of which heat is induced in the tissues by electro magnetic induction. It may be proven that when a living tissue is subjected to the influence of short wave therapy, the temperature in the immediate neighbourhood, and of the entire animal if necessary, is raised, the degree of pyrexia depending upon the duration of exposure. In the case of the common strains of the fore limb an exposure of half an hour twice daily for a week has been employed and the results so far obtained are at least as good as those obtained by line firing with the added advantage that the treatment is quite painless; in fact during its application it is only necessary to see that the applicator is kept within reasonable distance of the structures being treated.

Acknowledgments.—The author wishes to acknowledge the following publications: Clark's "Applied Pharmacology," "Penicillin" by Fleming, "Veterinary Anaesthesia" by Wright, and considerable help and instruction from Mr. J. R. Lawson of the Ministry of Agriculture and Fisheries, Weybridge, his partner, Mr. T. L. Griffiths, and assistants, who have been more than helpful.

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DISCUSSION

Mr. H. C. Swann (King's Lynn), opening the discussion, said: It gives me great pleasure to open the discussion on Mr. Gold's paper because it deals with several matters of extreme importance to the veterinary practitioner. I must apologize if my own remarks appear somewhat disjointed, but I have not had an opportunity to see the paper before the meeting. Mr. Gold did, in fact, offer to read it to me during the early hours at the President's reception at the Dorchester this morning, and had he done so it is probable that I would have opened the discussion then in a more able manner than I am doing at the moment.

Firstly, I would like to congratulate Mr. Gold on the excellence of his paper and at the same time sympathize with him for the difficulties he must have experienced in deciding what subjects to discuss. The paper has been qualified with the title "Some recent advances." Mr. Gold can therefore be forgiven for omitting to mention stilboestrol and the other synthetic oestrogens, phenothiazine, gammexane, D.D.T., benzene hexachloride, the acridine compounds, propamadine and, of course, crystal-violet vaccine for the control of swine fever. I will, however, try to confine my own remarks to the subjects with which Mr. Gold has specifically dealt.

Quite rightly, in so far as medicine is concerned the speaker has given prominence to advances in chemotherapy, and has particularly dealt with the sulphonamides and penicillin.

In regard to the use of the sulphonamides there appear to be four essentials of successful therapy. Firstly, it is essential to begin treatment as early as possible during the course of the disease. Secondly, it is necessary to get a rapid absorption of the particular sulphonamide into the blood stream and ensure that distribution is likely to occur in the tissues of the body in sufficient concentration to be inhibitory to the invading organisms. This is accomplished by the prescribing of a loading dose of the particular drug. Thirdly, it is advisable not to discontinue treatment too early. Mr. Gold has said that 24 to 48 hours' treatment is of sufficient duration. In my opinion treatment should be continued for at least three days to ensure that relapse shall not occur. If a relapse should occur despite this precaution, it is advisable to change the actual sulphonamide prescribed. Finally, it is necessary to use the appropriate drug which is likely to be effective against the causative organisms.

Mr. Gold has mentioned drug resistance of organisms to the sulphonamides. This risk is usually brought about by giving too small or too infrequent doses of the particular drug and may also be caused by continuance of treatment for insufficient time. In this connection it is interesting to note that drug resistance is a condition which does not depend upon the resistance of the patient but is due to the creation of a resistant strain of organisms. The possibility of such an unfortunate sequel to treatment is a very good reason why laymen should be prohibited from using this group of drugs without skilled advice.

The question then arises as to which sulphonamide to prescribe in any particular infection. In so far as sulphathiazole, sulphamezathine and sulphamerazine are concerned, these drugs although varying in their solubility, etc., have, generally speaking, only slight advantage over sulphapyridine, and because of their cost there seems no point at the moment in using them in veterinary practice.

Sulphapyridine, although more expensive than sulphanilamide, is effective in certain diseases in animals where the latter drug has little or no beneficial effect. As a general rule, I consider it advisable to use sulphapyridine in the following diseases: cattle pneumonia—and particularly transit fever, a disease very common in the Eastern Counties—calf diphtheria, white scours, and pneumonia of calves. In summer mastitis it sometimes helps to save the cow's life but not the affected quarter. In several pig, goat and sheep diseases such as mastitis, metritis and arthritis, sulphapyridine is also preferable. Sulphanilamide is quite effective enough to prescribe in streptococcal mastitis and metritis in dairy cattle; pneumonia, metritis and strangles in horses and in joint-ill in foals.

Mr. Gold has mentioned the so-called "gut-sulphonamides."

Sulphaguanidine was the first sulphonamide of this type to be introduced, but further trial produced disappointing results. This may have been due to its being absorbed in greater amounts than was at first originally thought. There are encouraging reports of the use of pthylalsulphathiazole and succinylsulphathiazole in the treatment of swine enteritis primarily due to *Salmonella suipestifer*, and scour in calves. In so far as the former disease is concerned, it is of course necessary to ensure that the virus of swine fever is not present. In the treatment of enteritis by a gut sulphonamide it is necessary to commence treatment early and to continue treatment for 24 to 48 hours after the diarrhoea has subsided. It will be appreciated that as the action of this group of drugs is a local one in the intestine, should septicaemia supervene—as is so often the case in calf scour—such treatment cannot be effective. As pthylalsulphathiazole is only slightly absorbed it is conceivable that this particular drug might be efficacious in the local treatment of diseases of the udder and uterus caused by sulphonamide-sensitive organisms.

In so far as the local treatment of mastitis is concerned, there are indications that diaminodiphenylsulphone is particularly valuable in this disease. Berger has reported the successful treatment of 15 to 20 cows with good results by the injection of 20 grammes of this drug into the affected quarter. At the present time I, in conjunction with Mr. J. Francis, M.R.C.V.S., of the I.C.I., am trying out the effect of this method of treatment. The drug is being supplied to me in collapsible tubes with a nozzle attached, each tube containing sufficient quantity of the drug (suspended in oil) for the treatment of one affected quarter. The great advantage of his method of application is that there is no risk of the spread of infection from quarter to quarter. This is particularly important in so far as the spread of tuberculous mastitis is concerned, where milk samples have not been examined. In acute mastitis the drug is left *in situ* and the quarter is not milked for two or three days. In the case of dry cows the quarter is not milked until the cow has calved. It is too soon to make any definite conclusions, but early results are promising.

Swales (U.S.A.) has reported that 1 gramme of sulphamerazine fed in 1 lb. of dry mash to chicks for six days will protect against caecal coccidiosis when those chicks are exposed to heavy contamination, a moderate infection occurring which induces a strong immunity. It occurs to me that we may be on the threshold of methods of inducing immunity in our farm-patients against epidemic diseases caused by sulphonamide-sensitive organisms by the inoculation of live or attenuated cultures of those organisms followed by an appropriate dosage of the sulphonamide in question.

Mr. Gold has referred to penicillin. The first headache in so far as penicillin is concerned is the recent discovery of five different penicillins. I hope that we are not now going to be confronted by the wholesalers with a group of different penicillins for which different specific actions are claimed. Despite the publicity which penicillin has had in the lay Press it should be realized that this drug is not a panacea for all ills; in fact, in my opinion, it will soon be realized that there are fewer important diseases of animals caused by penicillin-sensitive organisms than occur in man.

There are three great advantages of penicillin over the sulphonamide group of drugs. Firstly, penicillin is not toxic; in fact, 100 times the normal dose can be given with impunity. Secondly, there is less risk of causing permanent resistance of the invading organisms to the particular drug. Finally, penicillin is effective in the presence of blood, pus and tissue fluids and does not injure leucocytes. There are some very important essentials of therapy in so far as penicillin is concerned. It is, of course, essential that the disease in question should be due to a penicillin-sensitive organism. To a degree this sensitivity varies according to the concentration of penicillin and in some diseases the concentration obtained in the blood stream is insufficient, and the organisms have to be dealt with locally. It is necessary that direct contact should occur between the drug and the organisms concerned. In the case of deep abscesses, local applications of penicillin are likely to be useless; on the other hand, in the case of the thoracic cavity, udder, uterus, etc., penicillin does not readily pass from the blood stream to these sites and local therapy is essential. In practice it would appear that local treatment is likely to be more economic and often more efficacious than general therapy, especially when one realizes that, generally speaking, it will be necessary to prescribe 100,000 units per 100 lb. body weight every three hours by parenteral administration.

Whether local or general treatment is adopted it is necessary to prescribe large enough doses. As the drug is not toxic it is preferable to overdose than underdose. Finally, it is necessary to prolong treatment until the invading organisms have been defeated, as early cessation might result in a flare-up of the disease.

In some cases it may be efficacious to combine penicillin with sulphonamide therapy. In fact, in some cases, synergism seems to occur.

The question then arises as to when penicillin therapy should be prescribed. I believe that the disadvantage of general treatment —administration of large doses at frequent intervals—would render this method of treatment uneconomical and unpractical. The only indication for general therapy is perhaps in pyelonephritis in cattle in that penicillin is rapidly excreted by the urinary tract and the usual causative organism of this disease is penicillin-sensitive. The greatest advantages of penicillin, so far, have been seen when the drug has been used locally.

In so far as mastitis is concerned, I am well aware of the published reports on the local injection of penicillin solutions *via* the teat canal. In my opinion the drug is not being used in large enough doses and in streptococcal mastitis I recommend a minimum dosage of 100,000 units repeated at least twice at intervals of 24 to 48 hours. I also wonder whether the quantity of diluent usually recommended is sufficient. It appears necessary to bring penicillin into contact with the organism as quickly as possible, especially as the *p*H of milk in a diseased quarter may inhibit the action of the drug. When one considers the structure and ramifications of the udder, 50 c.c. of diluent appears to be a very small quantity of fluid to produce this desired effect.

I have not had the success with penicillin in the treatment of summer mastitis which Mr. Gold has described. Lovell has recommended the administration of *C. pyogenes* toxoid to increase the fluidity of the udder secretion prior to penicillin. I believe this to be an advantage, but it is unusual, in my experience, to save a quarter once affected with this disease.

At the moment in my practice we are attempting the treatment of mastitis with penicillin by the direct injection, under aseptic conditions, of a solution of the drug into the udder tissue with a long needle attached to a hypodermic syringe.

In the local treatment of diseases of the bovine uterus penicillin appears to give spectacular results. This method was first used in my practice by Mr. S. Green, M.R.C.V.S. 100,000 units dissolved in 50 c.c. of sterile water or penicillin in capsule are introduced directly into the affected organ. Whilst no bacteriological examinations have been made of pathogenic organisms in the discharge from cases of metritis under treatment, rapid abatement of systemic disturbance and cessation of discharge have occurred in several cases treated. In this connection it is interesting to note that *C. pyogenes*—a frequent invader of bovine uteri—is penicillin-sensitive, and moreover, penicillin is not inhibited by the presence of uterine secretions.

In man penicillin is being prescribed by inhalation for the treatment of respiratory disease. I have reason to believe that repeated intratracheal injections of a concentrated solution of penicillin may be useful in the treatment of respiratory disease in horses and cattle.

In arthritis due to pyogenic organisms a reasonable line of therapy is to aspirate the affected joint under as aseptic conditions as possible, and to introduce a similar amount of penicillin solution. It would be interesting to see the effect of this line of treatment in subacute chronic cases of joint-ill in foals when the articular surfaces of the joint have not been too severely damaged. At the present moment, however, the use of penicillin is limited to diseases of dairy cattle.

Finally, I believe that the injection of a solution of penicillin direct into the lesions of actinomycosis in dairy cattle is a useful line of treatment. Actinobacillosis, however, is due to an organism which is not penicillin-sensitive.

Passing on to the use of strain 19 abortion vaccine, may I remind my listeners of the need for applying the agglutination test to cattle before vaccination if it is intended to enter those animals into a Breed Society at a later date. I would particularly like to know how long the immunity from strain 19 vaccine lasts and when it is necessary to repeat the vaccination. In my practice I recommend that this should occur at every third pregnancy. I would also like to know when Mr. Gold considers it safe to vaccinate pregnant animals. I have frequently vaccinated animals up to two months pregnant with no untoward sequelae, although it certainly appears inadvisable to vaccinate any animals further advanced than this period.

In so far as the Calf Vaccination and Panel Schemes of the Ministry of Agriculture are concerned, considerable confusion occurs through vaccinated animals not being properly identified, and through this source alone considerable wastage of vaccine must occur. It is also desirable that vaccine intended for official and private purposes should be correctly identified.

To come now to advances in surgery, Mr. Gold has made some critical remarks regarding chloroform anaesthesia. I certainly would not like to associate myself with this trend of thought. On the other hand, I do not consider chloral hydrate to be a

satisfactory general anaesthetic, though I certainly do regard it as a very valuable narcotic. One of the chief disadvantages of this drug is the risk of slough at the site of injection. In my opinion this is usually due to damage of the opposite wall of the vein by a sharp needle and I recommend that for intravenous anaesthesia a trocar and cannula should be used. With practice it is quite easy to penetrate the vein with this instrument; the flow of blood can be controlled and moreover, the end of the cannula is incapable of damaging the interior wall of the vein.

So far as abdominal surgery in bovines is concerned, I would emphasize that to me it appears very desirable that dead-space should be avoided when suturing. After suture of the peritoneum, the muscle and skin should be sutured together. By this means, better union will occur as the muscles cannot move, and there will of course be fewer deep sutures to act as possible foci of suppuration.

Mr. Gold has mentioned the treatment of inguinal hernia by ligation. In my opinion ligation is rational surgery. If general anaesthesia becomes compulsory for the castration of colts it may well be that there will be no further need for clams, emasculators and ecraseurs, and ligation will become a normal technique in such operations. I would ask Mr. Gold what suturing material he prefers and under what circumstances does he use nylon, catgut, or silk?

I would say, in conclusion, that revolutionary changes have occurred in recent years in so far as the treatment of accidental wounds is concerned. In the past the routine practice has been continuously to irrigate such wounds with chemical antiseptics consisting of members of the cresol group, the salts of heavy metals or chlorine derivatives, etc. Such solutions in concentrations lethal to pathogenic organisms are harmful to the fixed cells which take part in wound-repair. Despite their use, chronic suppuration frequently persists.

The modern method of wound treatment consists, firstly, of débridement—the wound is enlarged, if necessary, to assist drainage, foreign bodies and dead tissue are removed and saline irrigation is then carried out to render the wound as sterile as possible. This treatment is followed by application of a chemotherapeutic agent such as sulphanilamide, propamadine, penicillin, etc., or a combination of these agents. In the case of cavity wounds, propamadine jelly is particularly valuable. The wound may then be covered with sterile vaseline gauze, and kept bandaged for from three to six days.

The advantage of this advance in wound therapy is that less frequent dressings are necessary, less damage is caused to granulating surfaces, wound secretion containing defensive agents is not removed, and there is less risk of accidentally introducing further infection. Moreover, such wounds are less painful to the patient, take less time to heal and are attended by less scar tissue.

Advances such as these are one of the few blessings of war, in that, in the main, they are based on the war-time experiences of human surgeons. There is a conspicuous absence of reports in veterinary literature dealing with recent advances in surgery. I believe that most practitioners and members of the R.A.V.C. must have gained valuable experiences which are unrecorded. I hope Mr. Gold's paper and my own remarks will promote a healthy discussion and bring to light many of these experiences.

Finally, what is perhaps more important, I hope that it will be a means of encouraging all members of the Association to forward details of such experiences to the Editor of *The Veterinary Record* so that dissemination of knowledge will occur, to the advantage of all members of the Association.

Mr. Gold, in reply, thanked Mr. Swann for letting him off so lightly. It appeared that he had only two or three questions to answer. In the case of the dosage of penicillin he agreed that the recommended dosages of 10,000 to 20,000 units of penicillin proved to be quite inadequate and the best results appeared to be obtained by the injection of a minimum of 100,000 units per injection. He disagreed very strongly with Mr. Swann when he said that chloral was only a narcotic; with chloral given intravenously one could obtain light, medium or deep narcosis, or light, medium or deep anaesthesia. Another point was the type of suture material employed. That depended upon the type of operation or whether the suture was being removed or left *in situ*, and it was in reference to the inguinal hernia operation where the ligature was of catgut, size No. 4. In the case stated in the paper, namely, traumatic reticulitis, the rumen was sutured by a continuous Lembert suture, using size 2 or 3 catgut; the parietal peritoneum being closed by a continuous catgut suture. The muscles and skin were sutured together as described in the paper by means of tape sutures. The material was not ideal, but as soon as nylon tape became available one might carry the suture through skin, muscle, peritoneum, into the peritoneal cavity and back out through peritoneum, muscle, skin, thereby closing the wound with one row of interrupted removable sutures. (Nylon was not absorbed and must be removed.)

With regard to the use of strain 19, it stated in the paper that after being vaccinated as calves, the animals should be revaccinated after they had delivered their first calf, otherwise one found a considerable number which aborted their second or third calves. The two injections seemed to be the ideal for the control of abortion.

Professor J. G. Wright (University of Liverpool Veterinary School): I am a chloral hydrate enthusiast. During the past five years I have used it on upwards of 200 surgical cases in the horse, and I have not had any deaths I could ascribe to its use. The method of administration used is intravenous injection. In the early days of my experience I had three cases in which, consequent on some of the solution being introduced into the perivascular connective tissue, an inflammatory reaction developed. In none was it serious; the vein remained patent, and the inflammation subsided in the course of ten to 14 days. With improvement in the technique of administration I now believe this risk to be negligible. Amongst the technical points I would stress are:—

(1) *The use of a suitable needle and effective penetration of the vein.*—We use a needle, 11 gauge, 6 cm. long, with its point cut at an acute angle. At one time we were using a needle with a 45 degree point, but found that it tended to cut out and become blocked by a piece of skin. To overcome this difficulty when using such a needle, we introduce a stilette after skin penetration to ensure the lumen is clear. Having introduced the needle into the vein, we continue to push it up the vessel for a further inch or so to ensure that as the vein collapses on the release of pressure it is not drawn off the needle. We believe that our early errors were due to this cause. When administration is being carried out with the animal standing, an insensitive skin weal should be produced using a fine needle, prior to insertion of the larger intravenous needle.

(2) *The use of an appropriate concentration of the drug.*—Owing to the extremely irritant nature of chloral hydrate it is essential that the drug shall be used in dilute solution. At the same time one is controlled in this connection by the ultimate volume of fluid to be used, for clearly there is an optimum time which the injection should occupy when, as is our practice, it is made by gravity. We consider this time to be about four minutes, and as the apparatus we employ injects about 750 c.c. in four minutes, a 10 per cent. solution is used to which is added 1 per cent. of each, sodium chloride and sodium citrate.

(3) *Depth and duration of narcosis.*—We consider the greatest use of chloral hydrate in the horse to lie in the induction of deep narcosis; a state which is augmented for operation either by inhalation or by local or regional injection. An important consideration is the length of time the animal will remain recumbent. After the induction of deep narcosis only, the animal remains down for from one to one and a half hours, whereas when full general anaesthesia is induced, recumbency may persist for a period of three hours or even more.

(4) *Dosage.*—Dealing with comparatively healthy horses which have not been fasted other than the withholding of food on the morning of operation, we find that a dose of 5·5 grammes per hundredweight gives the desired depth. As was the case with barbiturates in the dog, it has been noticed that light animals tend to take a higher unit dose than do heavy ones, and the figure previously quoted is for animals of about 11 hundredweight. For colts and ponies, the dose may be increased to 6 grammes/cwt. and for heavy horses reduced to 5 grammes/cwt. When the drug is administered slowly in the standing position, the animal generally falls to the ground after a dose of about 5 grammes/cwt. has been given. In the majority of cases the narcosis present is adequate for the purpose of operation. If, however, deeper narcosis or full anaesthesia is required, an additional quantity is administered after the animal has been restrained. I consider the intravenous route to be superior in every way to the stomach tube method.

My experience of chloroform in the horse may have been singular, but I must confess that I find the drug when used alone and by the simple mask method of administration to be an unsatisfactory general anaesthetic, particularly when prolonged and smooth anaesthesia is required. Moreover, its use is not without danger. I recognize, of course, that for simple interferences occupying a few minutes only it may be satisfactory.

We use chloral hydrate by intravenous injection for cattle also, but here I must utter a note of warning. The bovine is a bad subject for general anaesthesia irrespective of the method of induction. With the onset of full anaesthesia there is a grave risk that rumen contents will pass up the oesophagus and be inhaled. I have seen such accidents occur. Thus when using chloral hydrate it is important that the degree of anaesthesia induced shall not go beyond that classed as light. As the accurate assessment of depths of anaesthesia in cattle is by no means certain, we make

a rule not to exceed a dosage of 5 grammes/cwt. It may interest the audience that, having removed a living foetus by caesarean section performed under chloral hydrate anaesthesia, no sign of narcosis was seen in the calf. It breathed readily after removal from the uterus and continued to do so. This contrasts favourably with our experience of the barbiturates in the dog.

The second condition to which I would refer is that of umbilical hernia in the horse. I have long been dissatisfied with the forms of operation involving the use of clams or transfixing pins with ligatures and for a number of years now have adopted the method of ligature of the peritoneal sac. I claim no originality for the method, for it was described to me by Silbersiepe of Berlin when I was in Germany in 1938. The method comprises exposure of the peritoneal sac down to the abdominal wall, the twisting of it into a pedicle and ligature at the base using No. 4 20-day chromic catgut. To ensure support, the ligature is wound around the pedicle several times before tying it off. The results have been highly gratifying. There is, however, one type of umbilical hernia which requires special consideration. It is the large-ringed type in which, consequent on the continued occupation of the sac by parts of the abdominal viscera, the peritoneal lining has become grossly thickened. Our method in these cases is, first, completely to expose the sac and then obliterate it by a series of Halstead catgut sutures applied as closely as possible to the abdominal wall. We reinforce this row by a second placed half an inch above the first. The superfluous portions of the sac are then removed and the connective tissue and skin sutured. As with all horse operations, it is our practice to powder exposed tissues with a sulphonamide prior to suturing. Of the sulphonamides at our disposal we have found sulphamezathine to be the most efficient in the control of post-operative sepsis.

Finally, might I refer briefly to the use of penicillin in mastitis? I heartily support Mr. Swann's contention that we must guard against acceptance of this agent as a panacea. The results of the work done at Liverpool, largely by my colleague, Mr. G. H. Arthur, in the treatment of acute mastitis associated with *Corynebacterium pyogenes* infection have so far been disappointing. Despite the initiation of treatment very early after the onset of the disease and the use of very large unit quantities, frequently repeated, by intramammary injection, we have not yet seen an affected gland restored to normal function. In this connection I would point out that not all cases of acute mastitis which occur in August are due to *C. pyogenes*. Cases from which a streptococcus is isolated may be clinically indistinguishable from those associated with *C. pyogenes*, and in the former group it is probable that penicillin will be useful.

Mr. G. Elmes (St. Albans) said that the paper had been most entertaining and brilliantly presented. What he would like to emphasize was anaesthesia. Mr. Gold did not like chloroform, but after long years of using it he was "in love" with it and thought it was fine. Of course, there had been great advances and Professor Wright had spoken of nerve block. He was afraid he would never accomplish it. Many of the younger members would, no doubt—he admired their enthusiasm, but there was the Animals Anaesthetic Act to keep in mind. This Act was no credit to the veterinary profession; it was brought about by public opinion and he would venture to quote the words of that very great Englishman and sportsman, Lord Lonsdale, who said, "More cruelty takes place in veterinary surgeons' yards than anywhere else." That was damning to the profession. Of course the Act had been of very great benefit to their patients, who were dumb animals.

Mr. Swann mentioned that anaesthesia might be used for the castration of the equine. When the Animals Anaesthetic Act was before the Committee—it was opposed in Committee by the agricultural Members of Parliament and also by the veterinary profession—evidence was taken from interested parties, and the veterinary profession, led by the then President of the Royal College and one or two others, said that it was impossible, that it would take two veterinary surgeons to anaesthetize and carry out the operation. This evidence had no foundation in fact; they knew nothing about it. He thought, as was suggested by Mr. Swann, that large animals should have the benefit of anaesthesia for operations before it became again an Act of Parliament. It was so simple and easy. He had carried it out for a number of years. He started practice by using the rough and ready methods, then on to the standing operation, but thinking a more humane method should be employed, chloroform anaesthesia was adopted, given standing to colts.

Mr. Gold, in reply, said that the so-called Animals Anaesthetic Act, 1919, should be abolished and brought up to date by veterinary surgeons. The late Dr. Bullock said that when the Committee sat not a single veterinary surgeon was invited to it: they did not think the Act would go through, but it did go through without any veterinary advice whatever being asked or given. There were such anomalies as a general anaesthetic must be given to perform laparotomy but rumenotomy might be performed under a local anaesthetic.

Mr. E. P. Barrett (Guildford) would be brief, but wanted to ask one or two questions. With reference to summer mastitis, he had not seen any case of resolution in this condition as a result of the use of penicillin, but he had thought that, after such treatment, there had been a much reduced tendency to abscess formation in the udder, which was a troublesome and usual complication. He wondered if Mr. Gold had noticed this. On the question of the dilution of penicillin for introduction into the udder, it had occurred to the speaker that an increased amount of fluid might spread the penicillin further into the udder tissue, though he was told that it was just as effective injected in 10 c.c. of diluent as in 50 c.c. What was Mr. Gold's opinion?

With regard to the use of penicillin in actinomycosis, he understood that it had been used with good result in the human subject, and he would like to know if Mr. Gold had any experience of its use in this condition in cattle. He had under treatment a valuable bull which had a very large lesion in the lower jaw, and which, as one would expect, had not responded to large and repeated doses of sodium iodide intravenously. The administration of penicillin hypodermically every three hours for four or five days was impracticable and uneconomic. He was told that a promising and practical method of treatment was a combination of local application and the intramuscular injection of penicillin in oil twice daily. This preparation of the drug was, unfortunately, not yet available for general use. He would be grateful for some advice on the treatment of this disease.

In traumatic reticulitis, the speaker wondered if Mr. Gold restricted the animal's drinking for a few hours before the operation. The patient was usually thirsty, and an excess of fluid in the rumen was liable to overflow through the operation wound, with resultant contamination of the wound and interference with first intention healing.

In connection with coccidiosis, when enquiring from one of the drug houses as to the sulphonamide of choice for the treatment of it, he was informed that sulphamezathine, which is easily absorbable, was more effective against coccidia than sulphaguanidine which was largely restricted to the lumen of the bowel, because most of its life cycle was spent in the epithelium of the intestinal mucosa. He would like to ask Mr. Gold whether he agreed with this.

Mr. Gold: With regard to the use of penicillin in summer mastitis the facts were that in maiden heifers recoveries were good, in pregnant heifers, pregnant for the first time, they were not so good, and in cows which had had several calves they were not good at all. But at all times there was an improvement over the older line of treatment. He agreed with Mr. Barrett that there seemed to be less tendency to abscess formation in the affected quarter or quarters treated this way. Mr. Barrett mentioned coccidiosis which, he presumed, meant coccidiosis in poultry which did not come within the scope of his paper and in any event he had had little experience in the treatment of this disease.

With regard to the treatment of actinomycosis in the jaw, he tried one case of a Jersey bull which had a large swelling on the left side of the cheek, with 100,000 units of penicillin every three hours for 48 hours and it had no effect whatever. There was a limit to the injections which could be given at three-hourly intervals! With regard to the volume of penicillin solution injected into the affected quarter or quarters in summer mastitis, one seemed to get the best results by putting 100,000 units in 20 c.c. of sterile distilled water. Distilled water was very apt to become infected with organisms which produced penicillinase (this, of course, destroyed penicillin) and he would advise veterinary surgeons to see that their sterile distilled water was re-sterilized each morning before they went out.

Mr. T. L. Wright (London) said that he had greatly enjoyed the addresses and discussions which had taken place, but there was one point to which he would draw attention and that was the question of the revision of the Animal Anaesthetics Act. Mr. Gold suggested that it was time the N.V.M.A. took some action. He (Mr. Wright) wished to call attention to the Annual Report, p. 43, in which a short summary was given of what had been done; but that was not the whole story. Quite a lot of action had been taken by the Association, but at the moment Parliament had so much work that it could not deal with such a matter as animal anaesthetics. He would assure members that the Association intended to follow up its efforts at the earliest possible moment.

Mr. I. R. Barker (Hereford) said that the subjects of actinomycosis and sulphanilamide seemed to be very much to the fore in the discussion and he would deal with these two points, particularly as Mr. Gold mentioned that dry dressing of wounds in cattle was not attended with very much success. It depended just what

the infective organism was. Dry dressing *F. necrophorus* in necrosed wounds was attended with great success wherever it happened to be; if it was done in a calf diphtheria it cleared up quickly with a dressing of sulphanilamide powder. Any lesion caused by *Fusiformis necrophorus, e.g.*, foul in the foot, was also cleared up with sulphanilamide. About twelve months ago he was called to a cow with a nasty filthy necrosis in a deep hollow in the tongue. Thinking it was a *Fusiformis necrophorus* infection he treated the tongue with sulphanilamide. Before doing so, however, he took a swab and was astonished to find that it was actinobacillosis. He had had 25 cases of actinobacillosis since then, some of them simulating actinomycosis, which required a much more active diagnosis. All conditions caused by actinobacillosis yielded promptly to a loading dose of 3 oz. and nine 1 oz. "boosting" doses at intervals of eight hours. This was the dosage for an ordinary mature full-grown animal. The dosage required adjusting with the age and weight of the animal. The results were contrary to experience with the exhibition of iodine in any shape or form, either intravenously or by mouth. There were one or two cases which had had peculiar sequelae. On one occasion the lesion healed and one was left with a rise in temperature. The cessation of sulphanilamide relieved that condition. Another patient exhibited lung lesions in which resolution took place without any therapy. If subsequent therapy was required after the 12 oz. of sulphanilamide had been given, small doses of the double iodide of mercury and iodide of potassium seemed to be adequate and sufficient. So far there had not been any recurrence and always a perfect recovery, so that he rather deprecated the remark that sulphanilamide should not be used as a dry dressing for the bovine. He had never been happy during the whole of his clinical experience with regard to the clinical or pathological diagnosis of what had been termed the actinophytoses. It would seem that if the sulphanilamide was effective in this group only for actinobacillosis, many cases in the past should really have been termed actinobacillosis.

Professor W. M. Mitchell (Edinburgh) said that he must say something about the astonishing statement of Mr. Gold that anaesthesia could not be produced in the large animal by chloroform. He supported Mr. Elmes, who had just spoken on this point, as chloroform had been his standby all his professional life in large-animal surgery. He did not think that either chloral or chloroform was the ideal anaesthetic. Chemists had still plenty of room for experiment, and he hoped that one day they would produce an ideal anaesthetic. At least they could pursue the ideal. He seldom used chloroform alone; he used the combination of chloral and chloroform, as did Mr. Elmes. His experience of chloral began before the first world war, as a means of narcotising horses prior to destruction for dissection purposes, and from subsequent examination of the site of injection he had seen the irritant effects of the drug which had warned him of the risks likely to occur from its administration intravenously. He would admit that chloral intravenously, if there was no local reaction afterwards, was very good, but there was always the fear that an odd animal would suffer a local after-effect which would prejudice the good done by operation. He considered that there was less risk following operation under chloroform, but untoward deaths from its effects were also liable—hence the necessity for chemists to continue their efforts to find a more ideal anaesthetic.

He still liked the principle of giving chloral by stomach tube to a horse prepared for operation, as a pre-operative narcotizing agent: 10 to 12 drachms (40 to 48 grammes) for a heavy draught horse, 8 drachms (32 grammes) for a hunter, which made it easier to cast a fractious animal, diminished the risks of accident when cast and less chloroform was required to produce and maintain anaesthesia. The method of giving chloroform should not be in massive doses. Using a Cox's muzzle the anaesthetist should give chloroform to a narcotized animal in small amounts, starting with not more than 3 drachms, following with 2 drachm doses every three minutes; in this way anaesthesia could be maintained in most horses for one or two hours. His experience in connection with long operations had largely been associated with feet cases, horses suffering from "canker," which required maintenance of anaesthesia for one to two hours, and he had had very little trouble following this method of anaesthesia. The occasional case which was difficult to anaesthetize fully by chloroform might attract some to adopt intravenous chloral for routine anaesthesia, but so many people had spoken of the occasional case of sloughing in the neck that he, for one, was chary about discarding the old method of producing anaesthesia by chloroform, with chloral as a pre-narcotizing agent.

Mr. Gold, in reply, thanked Mr. Barker very much indeed for the suggestion for the use of sulphanilamide in actino bacillosis. He felt he had learned something and would put it into practice, but the promiscuous use of the sulphonamide group of drugs was not to be encouraged.

In reply to Professor Mitchell, he was sorry that he seemed to think the speaker was quite a heretic. He used chloral *via* the stomach tube as a narcotic for six years without an accident; then a Shire mare died under chloral given by this method. Six years later three animals died in four weeks; that was in 1936, since when he had employed the intravenous route. He preferred the intravenous route because one could regulate the dosage and could vary it according to the individual idiosyncrasy of the animal. Experience and statistics showed the intravenous route to be the safer.

The Chairman (Professor Dalling), in thanking Mr. Gold for his paper, suggested that in future the Congress must consider the time allotted to these discussions. Much had been learned that morning and they had been given much to think about.

CLINICAL COMMUNICATION

Blood Transfusion in a Case of Bovine Piroplasmosis*

R. L. LEWIS, M.R.C.V.S., D.V.H.,
Llanrwst

The subject was a red shorthorn cow in milk, which I was called in to attend in a district where red water is known to be prevalent.

The symptoms were those of a typical case of this disease, and the patient had profuse diarrhoea and a dark purple coloured urine.

Initial treatment consisted of an injection of "Pirevan." The animal was kept in, and rugged up, given bran mashes and cut green fodder, and allowed copious quantities of drinking water.

Two days later it was found that there had been no response to treatment. The "Pirevan" was repeated, and owing to secondary constipation sodium sulphate was also prescribed. On the following day the animal was found to be recumbent, refused to rise, had complete anorexia, a weak pulse, accelerated heart beats, anaemic mucosae, and a subnormal temperature.

In consultation with Mr. Edwards, assistant veterinary investigation officer at Bangor, it was decided to attempt blood transfusion.

For this purpose blood was drawn from the jugular vein of two yearlings—one a heifer and the other a bullock. The blood was collected through a cannula direct into a flask containing sodium sulphathiazole, sodium citrate and dextrose, and continually agitated by shaking to avoid clotting. The blood, consisting of 2 litres, was then successfully transfused into the jugular vein of the patient, the process taking about 10 to 15 minutes to complete. The patient, whose temperature was 96°, remained in a recumbent position and was in a semi-comatose state for several hours after the transfusion. Next day, however, she was up and eating, apparently well and passing urine of normal colour. Fifteen days later there was a recurrence of the disease despite the fact that the animal had remained indoors since the beginning of the first attack. This was attributed to failure to destroy all the invading piroplasms, their multiplication having again occurred subsequent to the blood transfusion. Following further administration of a single dose of "Pirevan," response to treatment was evident within 24 hours.

Whilst it is not claimed that blood transfusion is a substitute for the chemotherapy of redwater, it is suggested that this method of treatment is a useful adjunct in those cases where anaemia has become so marked that death appears inevitable.

I wish to acknowledge assistance from Mr. Rowlands and his staff in the treatment of this case.

* Presented to the meeting of the North Wales Division, N.V.M.A., held at Bala, July 26th, 1946.

The 100,000th horse was recently delivered to Poland by U.N.R.R.A. and it is planned to send the last of 133,000 animals there before winter. Shipments have gone from Northern Ireland, Canada, the U.S. and Denmark, and 1,100 ponies have been sent from Iceland. Poland lost 2,700,000 horses during the war, and many of the stock replacements are breeding mares so that, if possible, Poland's numbers can be built up to normal within four years.

* * * * *

"England and Wales constitute the finest grass region I have ever seen and surpasses all in N. America and Canada It is a natural livestock area."—Mr. T. E. Milliman, of Ithaca, New York, a guest of the N.F.U.

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Weekly Wisdom

Nature has no intention of maintaining normal reproduction in the face of abnormal demands.—R. H. Smythe.

ABSTRACTS

[I.—Avirulent Anthrax Vaccine. Sterne, M. (1946.) *Onderstepoort J. vet. Sci.* **21.** 41-43. **II.—A Note on the Efficacy of Commercial Anti-Anthrax Bacterins.** Sterne, M. (1945.) *J. S. Afr. vet. med. Ass.* **16.** 82-83.]

I.—Sterne reports very favourably on the use of an anthrax vaccine prepared from avirulent, uncapsulated strains of the organism. The bacteria are grown on casein hydrolysate agar until they reach the sporing state; they are then suspended in glycerol saline, and finally saponin is added. The efficiency and safety of the vaccine can be tested on guinea-pigs alone, but, as a precaution, large animals are inoculated with four times the correct dose before any batch of vaccine is issued.

Cattle and sheep react very mildly to the injection of the vaccine, and horses react rather more vigorously. Goats, as a rule, show little reaction, but occasionally large swellings are produced and deaths have been reported. It is probable that the production of oedematous swellings at the site of inoculation is not entirely linked up with the immunizing power, but depends more on the medium used for growing the vaccine. Cattle develop immunity probably within a few days, but in horses, immunity may take four to six weeks to develop.

An index of the efficiency of the vaccine is provided by the fact that in the last three years, during which fifteen million animals were inoculated, only twenty complaints were received by the laboratory. In only one case was the cause of the trouble proved to be anthrax following immunization. Death in this case took place two months after vaccination.

II.—In his note on the efficacy of commercial anti-anthrax bacterins, Sterne reports on four preparations of American origin. When these four were tested on guinea-pigs, in the dose normally used for a sheep, they were found to give practically no protection, while a similar dose of the Onderstepoort avirulent spore vaccine protected the guinea-pigs completely against one hundred minimum lethal doses. In this experiment the American vaccines were given twice at 14 days' interval, but only one dose of the South African vaccine was given.

I. W. J.

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[Solway Pine: A Marasmic Condition in Lambs in Certain Districts of Kirkcudbrightshire. Stewart, J., Mitchell, R. L., Stewart, A. B., Young, H. M. (1946.) *Empire J. exp. Agric.* **14.** 145-152.]

For many generations it has been known that lambs grazing on certain farms in this area show progressive debility with stunted growth, a dry broken fleece, and a serous discharge from the eyes. If left they die from exhaustion, but if transferred to other farms in the neighbourhood they recover. Analysis of soil samples on affected farms for major constituents revealed a general mineral deficiency, especially of magnesium and potassium. If these minerals were fed there was a general improvement in condition, but no reduction in the occurrence of pining. A more comprehensive examination showed that the soil of only two farms, one on which "pining" occurred in some fields only, and one on which cases of "pining" are cured, contained over 30 parts per hundred million of cobalt.

Two groups of lambs of equal age were chosen at random from the flock of one of the deficient farms, and one group of 38 received 7 mg. of cobalt chloride each week by the mouth from May 27th till September 9th. From July 9th to September 9th the undosed lambs gained an average of 5·2 lb. while those which were dosed gained 21·4 lb. None of the cobalt-dosed group showed any symptoms of pine, but ten of the controls showed advanced symptoms by September 9th.

The following year a well-drained loam field with a neutral *p*H value on a deficient farm was divided into two by an impassable wire fence. One half received a top dressing of superphosphate at the rate of 1½ cwt. per acre—the other a similar dressing plus 2 lb. of cobalt sulphate. Ten ewes, each with twin lambs, were placed on each half of the field. There was a substantial rise in the cobalt-content of the pasture on the treated half. By nine weeks of age the lambs on this half had gained an average of 10 lb. live-weight over those on the untreated, and by 15 weeks the gain had increased to over 23 lb. The pasture of this field before treatment contained eleven parts per hundred million of cobalt, which is just over the limit of ten parts per hundred million previously accepted as adequate. When the lambs on the cobalt-deficient half were transferred to the other they made a slow but uneventful recovery.

A map of Scotland showing all the known cobalt-deficient areas is shown, and it is pointed out that other areas where the cobalt-status is not low enough to cause severe pining, but where it may yet result in great economic loss, should also be identified and plotted.

J. O. L. K.

QUESTIONS IN PARLIAMENT

Jury Service (Veterinary Surgeons)

Mr. George Jeger asked the Secretary of State for the Home Department whether he will issue a general instruction to clerks of the peace that veterinary surgeons should be granted exemption from service as jurors.

Mr. Ede: I have no authority to issue any such instruction. Exemption from jury service is governed by statutory provisions and legislation would be required for the purpose which my hon. Friend has in mind.

Mr. Solley: May I ask my right hon. Friend whether, when such new legislation is being considered, account will be taken of the necessity of adequately reimbursing existing jurors for the expenses they incur when compelled to undertake jury service?

Mr. Ede: Of course, the whole of the matter will be borne in mind, but I should not propose to pay veterinary surgeons more than doctors.

Imported Meat (Foot-and-Mouth Disease)

Mr. Hurd asked the Minister of Food what steps he is taking to prevent the introduction of foot-and-mouth disease with the cow beef which his Department has arranged to import from the Continent.

Mr. Strachey: As a result of a visit to Denmark by the Chief Veterinary Officer, Ministry of Agriculture and Fisheries, the Danish Authorities have made arrangements which will minimize the risk of introducing foot-and-mouth disease. Further, the importation and distribution of meat will be entirely in the hands of my Department and at the request of my right hon. Friend, the Minister of Agriculture, I will restrict distribution to the densely populated areas.

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Inoculation, Cheshire

Mr. Viant asked the Minister of Agriculture whether his attention has been called to the case in which two Cheshire farmers were awarded damages against two veterinary surgeons for injury to 60 cows and heifers and the death of 24 calves following inoculation; and whether his Department will take steps to discontinue the use of this serum or vaccine in view of these disastrous results.

Mr. T. Williams: The toxoid with which the cattle were inoculated as a preventive against summer mastitis is not used by my Department. It is a commercial preparation which, I am informed, has been used without harmful effect before, and since, this unfortunate case.

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Higher Agricultural Education

Major Legge-Bourke asked the Minister of Agriculture if he has yet reached any conclusions on the Report of the Loveday Committee on Higher Agricultural Education.

The Minister of Agriculture (Mr. Thomas Williams): I have already stated that I am in general agreement with the coherent plan suggested by the Committee for improved facilities for higher agricultural education to meet the needs of the future, and that I wished to commend it to the attention of the universities and other interested bodies. I am now considering the detailed recommendations of the Committee in the light of the views expressed by those bodies.

Major Legge-Bourke: Will the Minister expedite his final decision on the recommendations regarding the university course, particularly in view of the recent establishment of the National Advisory Service?

Mr. Williams: I can assure the hon. and gallant Gentleman that conversations are taking place with the universities.

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Streptomycin (Clinical Trials)

Colonel Crosthwaite-Eyre asked the Lord President of the Council what provision has been made by his Department for research into the use of streptomycin; and whether any moneys have been allocated for research and production of this drug.

Mr. H. Morrison: The Medical Research Council have arranged for making controlled clinical trials of streptomycin, as soon as supplies are available, to determine its value in tuberculosis and other conditions and the best methods of its use. Funds are being allocated for the cost of this work, including the purchase of the necessary quantities of the product.

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Feeding-Stuffs (Allocation)

Mr. Baldwin asked the Minister of Food whether he is satisfied that Great Britain is given a fair allocation of feeding-stuffs by the International Emergency Food Council.

Mr. Strachey: I am satisfied that we are getting a fair share of

oil cake, which is the only kind of animal feeding-stuff allocated by the International Emergency Food Council.

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Vivisection

Mr. Viant asked the Secretary of State for the Home Department how many visits to registered places for experiments on living animals, under the Cruelty to Animals Act, 1876, were paid by the inspectors during the year 1945.

Mr. Ede: Eight hundred and sixty-one, Sir.

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Scottish Water Advisory Committee

Mr. Pryde asked the Secretary of State for Scotland if he is now in a position to make a statement in regard to the advisory committee to be set up in terms of the Water (Scotland) Act, 1946.

Mr. Buchanan: Yes, Sir. My right hon. Friend has appointed an advisory committee consisting of 17 members, which will be holding its first meeting this week. A list of members is being circulated in the Official Report.

Following is the list:

Chairman: Major G. H. M. Broun Lindsay, D.S.O., Association of County Councils in Scotland.

Members: G. Baxter, Esq., O.B.E., M.I.C.E., M.I.W.E., Scottish Counties of Cities Association; S. N. Cozens-Hardy, Esq., Scottish Council (Development and Industry); J. F. Duncan, Esq., Scottish Farm Servants' Union; A. A. Fulton, Esq., B.Sc., M.I.C.E., M.I.MECH.E., North of Scotland Hydro-Electric Board; G. Matthew Fyfe, Esq., M.B., CH.B., D.P.H., Society of Medical Officers of Health (Scottish Branch); W. Gray, Esq., O.B.E., M.INST.M. & CY.E., M.I.W.E., Institution of Water Engineers (Scottish Section); R. Lyle, Esq., B.L., Convention of Royal Burghs; J. W. McKillop, Esq., Association of County Councils in Scotland; W. Malloch, Esq., B.Sc., Scottish Salmon Fisheries; J. Mann, Esq., Association of County Councils in Scotland; The Earl of Mansfield, Scottish Land and Property Federation; A. Porter, Esq., Scottish Counties of Cities Association; D. Ronald, Esq., M.I.C.E., F.R.S.E., a consulting engineer; J. R. Rutherford, Esq., C.B.E., J.P., Convention of Royal Burghs; J. Valliance, Esq., National Farmers' Union and Chamber of Agriculture of Scotland; G. E. R. Young, Esq., Federation of British Industries.

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Cruelty to Animals

Mr. Peter Freeman asked the Secretary of State for the Home Department how many contraventions of the Cruelty to Animals Act, 1876, were noted by his inspectors during each of the last ten years; and in how many cases were prosecutions or other action taken.

Mr. Ede: The number of irregularities noted has been as follows:

1936	...	3	1941	...	—
1937	...	7	1942	...	4
1938	...	3	1943	...	6
1939	...	4	1944	...	—
1940	...	—	1945	...	4

No proceedings were instituted, but other action was taken in all cases.

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Maize and Fish Meal for Feeding-stuffs

Lieut-Col. Bromley-Davenport asked the Minister of Food if he will give up-to-date information indicating the present amount of maize available to, and being imported by, European countries together with some information as to why such supplies are not available for British pig and poultry keepers; and if better arrangements are to be made in the near future to ensure that Great Britain will have an adequate share of the world's exportable supplies of maize.

Mr. Strachey: I am afraid the detailed information about other countries which the hon. and gallant Member asks for is unobtainable. If the hon. and gallant Member means to enquire why maize that has been imported by other European countries was not purchased by the United Kingdom I would point out that we have made substantial purchases. These are being brought to this country so soon as the necessary arrangements can be made.

Lieut.-Col. Bromley-Davenport asked the Minister of Food the present average output of fish meal in this country and what arrangements are being made to make a greater proportion of this meal available for poultry food.

Mr. Strachey: The average monthly output of fish meal during the three months July to September, 1946, was 4,100 tons. Commercial poultry keepers already receive 10 per cent. of their ration in protein coupons against which fish meal can be obtained. I am advised this percentage of animal protein for poultry is enough.

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Pigeons

Sir T. Moore asked the Secretary of State for Air the number of pigeons used by his Department during the war; and whether any estimate is available of the losses from enemy action.

Mr. de Freitas: Approximately 100,000. About 23,000 were lost on operations, but how many of these were shot down we cannot say.

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Medical Research Animals (Food)

Mr. Peter Freeman asked the Minister of Food why a weekly allowance of two-and-a-half tons of oats and one ton of bread is made under licence from his Department to Messrs. A. W. Tuck and Sons, of Rayleigh, Essex, for the purpose of feeding mice; and if he will stop this allowance during this time of bread shortage.

Mr. Strachey: Oats and spoilt bread unfit for human consumption are supplied for mice and rats bred for medical research purposes. I am not prepared to stop the supplies needed for this important work.

NOTES AND NEWS

Diary of Events

Dec. 2nd.—Meeting of the Farmers' Club, Royal Empire Society, 2.45 p.m. [Mr. Anthony Hurd, M.P.: "Marketing—What Now?"]

Dec. 3rd and 4th.—R.C.V.S. Written Examinations begin.

Dec. 4th.—Meeting of the Section of Comparative Medicine, Royal Society of Medicine, 1, Wimpole Street, W.1, 5 p.m.

Dec. 4th.—Meeting of the Association of Veterinary Teachers and Research Workers (Founder Members resident in Scotland) at the "Dick" College, Edinburgh, 2.45 p.m.

Dec. 6th.—Meeting of the South Wales Division, N.V.M.A., at Swansea (Mackworth Hotel), 2.15 p.m.

Dec. 6th.—Meeting of the Biochemical Society at the National Institute for Medical Research, Hampstead, 1.30 p.m.

Dec. 11th.—Meeting of the Editorial Committee, N.V.M.A., at 36, Gordon Square, W.C.1.

Dec. 11th.—Meeting of the Parliamentary and Public Relations Committee, N.V.M.A., at 11 a.m.

Dec. 12th.—Meeting of the South-Eastern Division, N.V.M.A., at Tunbridge Wells (Mount Ephraim Hotel), 2.30 p.m.

Council and Committee Meetings, N.V.M.A., in January

For the early information of members the following meetings will be held in January next:—

Jan. 9th.—General Purposes and Finance Committee (morning), Veterinary State Medicine Committee (afternoon). (Both at 36, Gordon Square.)

Jan. 10th.—Technical Development Committee at 10 a.m., Council Meeting at 11 a.m. (Both at the Connaught Rooms, Great Queen Street, Kingsway, London, W.C.2.)

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New Appointments to the Staff of the Ministry of Agriculture

As notified in recent issues, Council, N.V.M.A., has decided that no advertisements for appointments to the veterinary staff of the Animal Health Division of the Ministry of Agriculture shall be accepted for *The Veterinary Record* pending the settlement, in a manner satisfactory to the Association, of the question of the status and salaries of the Veterinary Officers of the Division.

In the meantime, any members of the profession who may, nevertheless, contemplate applying for such posts, should these be advertised elsewhere, are requested first to communicate with the General Secretary of the Association at 36, Gordon Square, London, W.C.1.

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N.V.M.A. Membership Subscription

As stated last week, a circular has been issued intimating the amount of subscription that members are individually called upon to pay from 1947 in consequence of the revision of subscription rates agreed at the recent annual general meeting. To some members abroad has also been issued a "reminder" that the subscription for 1947 is due on January 1st: this should be regarded purely as a reminder and not a demand for immediate payment, and its inclusion with the circular as solely a means of saving paper and postage.

Inevitably there will, through lack of adequate information, be instances where members have been over-assessed: any member to whom this may apply is requested to furnish the necessary facts

to the Association's accountant so that the records may be corrected.

It is hoped that the many members whose subscriptions are paid by the banker's order method will complete and send to their banks, without delay, the authority (appended to the circular) for the payment of the increased subscription as from January 1st.

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Jury Service and the Veterinary Profession

It is regretted that the note published in our last issue relative to the above omitted intimation of the fact that not only the Royal College but the N.V.M.A., also, has made and is making repeated efforts to remedy the injustice whereby members of the veterinary profession are excluded from the exemption list. Accordingly, the Secretary of the Association, in addition to the Registrar of the Royal College, will, on application by any practitioner summoned for jury service, write to the relevant authority to support the application for relief.

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B.M.A. AND THE NATIONAL HEALTH SERVICE

The National Health Service Act, which appeared on the Statute-book recently after years of discussion, is essentially a framework within which a comprehensive service can be built up, much machinery and policy remaining for settlement. The co-operation of the medical profession of course is essential to its successful working, and the British Medical Association, by postal ballot, is seeking to learn, by November 30th, the profession's answer to the question: "Do you desire the negotiating committee to enter into discussions with the Minister on the regulations authorized by the National Health Service Act?" On the upper half of the plebiscite form is the following statement, addressed "to every member of the profession":—

The time has now come for a crucial decision by the profession. The Act authorizes the Minister now to proceed to make regulations dealing with a wide variety of subjects, including mode and amount of professional remuneration, the terms and conditions of service generally, and the composition of regional hospital boards.

The immediate practical issue which confronts the profession is whether it will or will not enter into discussions with the Minister on the subject-matter of these regulations. This is the issue which the Association places before the profession as a whole to determine by plebiscite.

To decide this issue is, by implication, to decide others.

Those who hold that, notwithstanding the divergence between the principles of the profession and the provisions of the Act, discussions upon the regulations should be entered upon will answer "Yes" to the appended question. A decision to enter upon discussions does not involve a decision to enter the service.

Those who hold that, in view of the wide divergence between the principles of the profession and the provisions of the Act, the profession should decline to accept service under the Government's scheme, *whatever* the regulations governing terms and conditions and other matters, will not authorize discussions with the Minister on regulations and will answer "No" to the appended question. If a sufficient majority of the profession give a negative answer the Association will take the necessary action and prepare for the inevitable conflict. Implicit in such a negative vote by general practitioners and members of visiting hospital staffs is an undertaking, if so advised by the Association, not to enter the new service.

Three other documents were sent out with each copy of the voting form: a covering letter from Dr. Charles Hill, Secretary of the B.M.A., a factual summary of the new Act, and a statement by the negotiating committee (which represents the medical profession as a whole) showing the main divergencies between the provisions of the Act and the views expressed by the organized bodies of the profession.

The main field of conflict, if it comes, will be that of general practice, where principal points of opposition are the ending of the sale of publicly remunerated practices, the "basic salary" element in payment of doctors, and the closing of the public medical service to newcomers in districts held to be adequately staffed.

In a speech at the recent conference on mental health the Minister (Mr. Aneurin Bevan) said he desired to remove apprehensions expressed in certain quarters that now the Health Act was passed he would impose "his almost illimitable ignorance on the general body of professional men concerned in its administration."

It was not the business of a Minister of the Crown, he said, to dictate to people how they should use their specialist knowledge. It was, however, the business of the Minister to put the best kind of facilities at the disposal of the experts.

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R.C.S. Honorary Gold Medal Presented to Sir Alexander Fleming

At the annual Buckston Browne dinner of the Royal College of Surgeons the President, Sir Alfred Webb-Johnson, presented Sir Alexander Fleming with the honorary gold medal of the College for his discovery of penicillin. The medal has been awarded only 20 times in the period of 144 years since it was instituted, and the President described the award of the medal as the most exclusive honour the College could bestow.

PERSONAL

Appointment.—The Colonial Office announces the appointment to The Colonial Service as a Veterinary Officer in Tanganyika, of Major D. W. P. Lake, M.R.C.V.S., of Barn and Byre, Kennington, Oxford. Major Lake, who studied at The Royal Veterinary College, London, served as an officer of the R.A.V.C., in India during the war.

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Births.—Curtis.—On November 18th, 1946, at 2, The Croft, Hungerford, to Mary (née Carter), wife of Hugh Curtis, B.V.Sc., M.R.C.V.S., a daughter.

Reed—To Margaret, wife of Sydney R. Reed, M.R.C.V.S., of Barnstaple, Devon—a son.

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Forthcoming Marriage.—Rowe—Grace.—The engagement is announced between John F. W. Rowe, M.R.C.V.S., 33, Croft Road, Swindon and Ruth E. Grace, West Shire, Thornbury, Bristol.

Marriage.—Barr—de Rougemont.—At Upham Parish Church, on November 8th, 1946, by the Rev. J. C. Paterson, Thomas F. F. Barr, M.R.C.V.S., D.V.S.M., second son of Mr. and Mrs. John Barr, of Biggar, Lanarkshire, to Maureen Paule de Rougemont, only daughter of Mr. and Mrs. de Rougemont, of London, and Hove, Sussex.

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TUBERCULOSIS (ATTESTED HERDS) SCHEME

Statement Showing Position of "Attested Herds" in each County as at September 30th, 1946

County	Certificates of Attestation in force as at 30.9.46	Approximate Number of Cattle Covered by Certificates of Attestation as at 30.9.46	Percentage of Attested Cattle to Total Cattle
Bedford	37	1,948	4·3
Berks	234	12,769	16·4
Buckingham	125	6,849	6·5
Cambridge	46	2,097	7·0
Isle of Ely	6	256	1·3
Chester	146	7,401	8·1
Cornwall	166	6,322	2·5
Cumberland	475	22,846	10·7
Derby	46	2,589	1·4
Devon	335	13,408	3·6
Dorset	252	13,307	9·9
Durham	174	6,751	5·8
Essex	260	12,354	10·0
Gloucester	186	10,601	6·0
Hampshire	277	12,995	9·4
Isle of Wight	17	761	3·8
Hereford	125	7,132	5·7
Hertford	125	8,103	14·2
Huntingdon	9	401	1·4
Kent	190	8,657	7·6
Lancaster	169	8,202	3·0
Leicester	71	3,586	2·3
Lincoln (Holland)	1	41	0·2
Lincoln (Kesteven)	8	319	0·5
Lincoln (Lindsey)	15	1,140	0·7
London	—	—	—
Middlesex	13	386	5·2
Norfolk	136	9,221	5·5
Northampton	43	2,553	1·8
Soke of Peterborough	—	—	—
Northumberland	147	7,118	3·7
Nottingham	41	2,067	1·9
Oxford	219	11,430	11·9
Rutland	7	839	4·1
Salop	191	10,577	4·0
Somerset	409	20,284	6·8
Stafford	62	2,242	1·0
Suffolk, East	55	2,993	3·9
Suffolk, West	50	3,098	8·8
Surrey	189	7,733	15·8
Sussex, East	150	6,819	6·8
Sussex, West	127	6,157	9·2
Warwick	94	5,926	4·1
Westmorland	318	15,355	16·3
Wilts	183	13,384	7·4
Worcester	61	3,145	3·4
Yorks, East Riding	16	616	0·5
Yorks, North "	339	11,154	4·7
Yorks, West "	215	9,702	2·9
England	6,560	323,724	5·1
Anglesey	21	983	1·8
Brecon	154	4,853	10·8
Caernarvon	103	3,590	5·8
Cardigan	3,023	43,428	59·3
Carmarthen	3,605	70,638	53·7
Denbigh	322	8,206	8·4
Flint	41	1,817	3·1
Glamorgan	121	3,437	4·6
Merioneth	799	15,047	36·3
Monmouth	111	4,379	6·8
Montgomery	314	10,663	11·6
Pembroke	1,508	20,493	30·0
Radnor	49	1,298	3·7
Wales	10,171	197,832	21·2
England and Wales	16,731	521,556	7·2

County	Certificates of Attestation in force as at 30.9.46	Approximate Number of Cattle Covered by Certificates of Attestation as at 30.9.46	Percentage of Attested Cattle to Total Cattle
Aberdeen	73	6,947	3·4
Angus	63	5,729	10·1
Argyll	294	12,113	19·9
Ayr	1,680	103,736	72·6
Banff	18	1,247	2·5
Berwick	20	1,561	5·1
Bute	318	8,084	77·3
Caithness	132	1,872	7·6
Clackmannan	18	1,223	27·9
Dumfries	836	50,654	52·2
Dunbarton	117	6,768	41·2
East Lothian	13	1,335	9·3
Fife	109	9,201	16·1
Inverness	34	2,061	4·0
Kincardine	20	2,019	6·0
Kinross	25	1,635	21·0
Kirkcudbright	473	36,070	50·6
Lanark	828	47,569	52·1
Midlothian	90	5,189	22·2
Moray	30	2,445	8·7
Nairn	10	671	8·5
Orkney	156	3,299	7·5
Peebles	90	4,238	39·9
Perth	104	6,749	8·1
Renfrew	209	12,414	40·9
Ross and Cromarty ..	24	1,240	9·3
Roxburgh	21	1,372	4·2
Selkirk	12	603	19·1
Stirling	204	12,009	29·8
Sutherland	6	291	2·9
West Lothian	54	3,142	22·1
Wigtown	312	27,524	40·4
Zetland	971	7,189	38·2
SCOTLAND	7,364	384,199	29·1

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R.C.V.S. OBITUARY

EDWARDS, Wilfred Bowes, Pindi, Stracey Road, Falmouth. Graduated, May 9th, 1893. Died, November 11th, 1946.

HOLT, JAMES, M.R.C.V.S., 79, St. Helens Road, Leigh, Lancs. Graduated London, December 20th, 1922. Died November 21st, 1946; aged 47 years.

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ADDRESSES OF DISEASE-INFECTED PREMISES

The list given below indicates, first, the county in which are situated the premises on which disease has been confirmed, followed by the postal address and date of outbreak.

FOOT-AND-MOUTH:

East Suffolk.—Kirton Hall, Kirton, Ipswich, Suffolk (Nov. 23rd).
Kent.—Denne Hill Farm, Barham, Canterbury, Kent (Nov. 24th).

SWINE FEVER:

Aberdeenshire.—Moss Farm, Slains, Ellon, Aberdeenshire (Nov. 25th).

SHEEP SCAB:

Denbigh.—Plas-yn-Thos, Llanyclan, Ruthin, Denbighshire (Nov. 25th).
Derbyshire.—Heybarn Farm, Little Hayfield, Stockport, Cheshire (Nov. 19th).
Yorkshire (W.R.).—Stoney Ridge House, Longshaw, Sheffield, Yorks. (Nov. 19th).
Flintshire.—Bryn Gwyn Mawr, Rhuallt, St. Asaph, Flintshire (Nov. 25th).

CORRESPONDENCE

The views expressed in letters addressed to the Editor represent the personal views of the writer only and must not be taken as expressing the opinion or having received the approval of the N.V.M.A.

Letters to the Editor should reach the Office not later than by the first post on Monday morning for insertion in following Saturday's issue.

Notice to Correspondents

The Editorial Committee regrets that, the paper supply situation having deteriorated, it has become necessary to ask correspondents again to accept a limitation on the length of letters submitted for publication. Accordingly, contributors to our Correspondence Columns are requested to note that, until further intimation is made, their communications must not exceed 350 words.

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JURY SERVICE AND THE VETERINARY PROFESSION

Sir,—Following a communication from me, Mr. George Jeger (M.P. for Winchester) tabled a question on November 21st relating to the above.

On November 9th I received a Jury Summons to appear as a Juror at the General Quarter Sessions of the Peace on November 23rd, and at once asked to be excused on the grounds given in your issue for November 23rd, together with proof that I was very busy with official and private tuberculin testing and herd examinations. The Secretary and Registrar of the R.C.V.S. and the General Secretary, N.V.M.A., both wrote to the Clerk of the Peace for this city on my behalf. The request was refused because the facts of the case did not justify it. After attending and not being chosen, I have been released until the morning of November 30th. This has meant that a lot of testing has had to be postponed, and that not a few owners wishing to secure a T.T. Licence will have to wait, as I have had two out of the three of my qualified staff ill, one only just out of hospital.

It is quite obvious that until we as a body are exempted in the same way as peers, parsons and doctors, we shall have to depend on the mentality of the Clerk of the Peace in whose area we happen to reside.

Yours faithfully,
J. F. D. TUTT.

"Rothiemurchus,"
St. Cross, Winchester.
November 24th, 1946.

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V.V.B.F. Christmas Appeal Fund

Dear Sir,—May we once again appeal for donations to our Christmas Gift Fund. It is probably only those of us who are closely connected with the working of the Fund who know with what joy and gratitude these small gifts are received.

To the widows, children and members of the profession too old or incapacitated to work, they bring a little ray of sunshine into a hard and drab existence.

We recognize that the call on members of the profession is great, but the need of our recipients is greater.

Please do not forget this very deserving appeal to help brighten the lives of those less fortunate than ourselves.

Cheques should be made payable to the V.V.B. Fund (Christmas Appeal Fund) and sent to the Hon Secretary, 10, Red Lion Square, London, W.C.1. Envelopes should be marked "Christmas Appeal."

ARNOLD SPICER, *President.*
J. B. BUXTON, *Hon. Treasurer.*
P. J. SIMPSON, *Hon. Secretary.*

Victoria Veterinary Benevolent Fund,
10, Red Lion Square, London, W.C.1.
November 21st, 1946.

DISEASES OF ANIMALS ACTS, 1894 TO 1937, AND AGRICULTURE ACT, 1937 (PART IV).

Summary of Returns of Confirmed Outbreaks of Scheduled (Notifiable) Diseases

Period	Anthrax	Foot-and-mouth	Parasitic Mange*	Sheep Scab	Swine Fever
Oct. 16th to 31st, 1946 ...	5	1	—	8	1
Corresponding period in—					
1945 ...	5	7	—	1	42
1944 ...	5	37	—	91	99
1943 ...	13	—	—	49	27
Total Jan. 1st to Oct. 31st, 1946 ...	77	34	7	74	332
Corresponding period in—					
1945 ...	103	119	6	103	845
1944 ...	154	134	7	177	1,200
1943 ...	244	15	6	175	447

NOTE.—The figures for the current year are approximate only.
* Excluding outbreaks in Army Horses.

Tuberculosis (Attested Herds) Schemes

The number of Attested Herds, *i.e.*, herds officially certified as free from Tuberculosis as at October 31st, 1946, was as follows:—

ENGLAND	WALES	SCOTLAND	TOTAL (GREAT BRITAIN)
6,722	10,210	7,668	24,600